Ethnicity as a Construct in Influencing Environmental Education Efficacy Beliefs

Presented by

Dr. Christine Moseley
University of Texas at San Antonio

Dr. Juliana Utley
Oklahoma State University

Self-efficacy

- "a cognitive process in which people construct beliefs about their capacity to perform at a given level of attainment" (Bandura, 1977)
- "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997)
- "influence on how much effort people put forth, how long they will persist in the face of obstacles, how resistant they are in dealing with failures, and how much stress or depression they experience in coping with demanding situations" (Tschannen-Moran et al., 1998)

Personal Teaching Efficacy

- Teacher's confidence that his or her individual abilities and efforts as a teacher can reach "even the most difficult or unmotivated students"

Teaching Outcome Expectancy

- Teacher's belief about whether environmental factors have a greater influence on students' motivation and performance than do teachers

Personal Environmental Teaching Efficacy (PETE)

- Belief in one's ability to teach environmental education effectively

- An individual's belief that one has the ability to effectively perform environmental education teaching behaviors

Environmental Teaching Outcome Expectancy (ETOE)

- Belief that students can learn environmental education facts external to the teacher
- Belief that effective environmental education teaching will have a positive effect on student learning

Ethnicity

- "the ethnic group or groups that people identify with or feel they belong to."

- "A social group whose members have one or more of the following four characteristics:
  • they share a sense of common origins
  • they claim a common and distinctive history and destiny
  • they possess one or more dimensions of collective cultural individuality
  • they feel a sense of unique collective solidarity."
  (Smith A. 1981)

Research Questions

- What effect did participation in the GLOBE curriculum have on personal environmental teaching efficacy and outcome expectancy of elementary pre-service teachers?

- Is ethnicity a construct that influences personal environmental teaching efficacy and outcome expectancy?

Participants

- Control group: elementary pre-service students enrolled in an Earth and Life Science Lab
- Experimental group: elementary pre-service students enrolled in an Earth and Life Science lab, using the GLOBE curriculum as a framework for the lab

Experimental Treatment

- Three sections out of seven of Earth and Life Science labs used GLOBE curriculum as the conceptual framework for a revised course in Earth Systems Science

Instrument

- Environmental Education Efficacy Belief Instrument (EEEBI) (Sia, 1992)
- Modified from Science Teaching Efficacy Beliefs Instrument (STEBI) (Enochs and Riggs, 1990)

Methodology

- Pre-test EEEBI given to control and experimental groups at beginning of semester
- Post-test EEEBI given to control and experimental groups at end of the semester

Results
Control group-Experimental group

Independent samples t-tests revealed:

- PETE
  * Significant difference between control pre and experimental pre (t_{111}=-3.953, p = .000)
  * No significant difference between control post and experimental post (experimental means higher)

- ETOE
  * No significant difference between control pre and experimental pre (control means higher)
  * No significant difference between control post and experimental post (experimental means higher)

Group differences for the subscales of the EEEBI-B prior to and after integrated content course.

	Control Group		Experimental Group					95% Confidence Interval of the Difference	
Variable	M	SD	M	SD	*t*	*df*	*p*	Mean Difference	Lower	Upper
PETE										
Pre-test	44.80	5.86	49.16	5.49	-3.95	111	.000*	-4.362	-6.548	-2.175
Post-test	47.89	5.89	49.28	4.16	-1.39	100	.167	-1.393	-3.377	.591
ETOE										
Pre-test	36.54	4.89	35.49	4.16	1.172	109	.244	1.056	-.730	2.842
Post-test	36.88	4.85	37.73	4.69	-.872	100	.385	-.852	-2.792	1.088

*$p < .05$

Results
Control Group Pre-Post

- Significant increase in PETE
  (t = -2.58, p = .011)

- No significant increase in ETOE

Results
Experimental Group Pre-Post

- No significant increase in PETE
- Significant increase in ETOE
  (t = -2.54, p = .012)

Independent samples t-tests

	Pre-Test		Post-Test					95% Confidence Interval of the Difference	
Variable	M	SD	M	SD	*t*	*df*	*p*	Mean Difference	Lower	Upper
Control										
PETE	44.80	5.86	47.89	5.89	-2.58	104	.011*	-3.095	-5.466	-.723
ETOE	36.54	4.89	36.88	4.85	-.335	103	.738	-.334	-2.310	1.642
Experimental										
PETE	49.16	5.49	49.28	4.16	-.139	107	.892	-.126	-1.961	1.710
ETOE	35.49	4.16	37.73	4.69	-2.54	106	.012*	-2.242	-3.992	-.493

Results
Ethnicity as a construct

- When group was accounted for, there was no significant differences for PETE based on ethnicity, prior to and after treatment

- When group was accounted for, there was no significant differences for ETOE based on ethnicity, prior to and after treatment

Results of 2 x 2 Factorial Analysis of Variance Personal Environmental Education Teaching-Efficacy and Environmental Education Outcome Expectancy

Source	*df*	*F*	$\acute{\eta}^2$	*p*
Outcome Expectancy:				
Group	1	2.848	.035	.095
Ethnicity	1	2.805	.034	.098
Group × Ethnicity	1	2.088	.026	.152
Error	79			
Personal Teaching Efficacy				
Group	1	2.542	.031	.115
Ethnicity	1	1.430	.018	.235
Group × Ethnicity	1	1.043	.013	.310
Error	79			

Note. Values enclosed in parentheses represent mean square errors.
*$p < .05$

Conclusions

- Between groups:

  GLOBE curriculum did not significantly influence pre-service teachers' personal environmental teaching efficacy and outcome expectancy (post experimental means higher in both)

- Among groups:

  GLOBE participants (experimental group) increased significantly in ETOE

  Non GLOBE participants (control group) increased significantly in PETE

Conclusions

- Ethnicity was not a significant construct in influencing personal environmental teaching efficacy and outcome expectancy

Discussion

- Do pre-service teachers know what environmental education is?
- Is GLOBE an environmental education curriculum?
- What is, in fact, environmental education curriculum, especially in the context of teacher education?

Implications to Teacher Education

- Teacher educators need to be explicit in the objectives and delivery of environmental education activities and curriculum with pre-service teachers

Future Research

- How do pre-service teachers define *environmental education*?
- How do pre-service teachers define *environment*?
- What other factors of ethnicity…culture, gender, geographical background, i.e… influence environmental teaching efficacy and outcome expectancy?